
Space Weather Forecast

Issued on Saturday 14 December 2024 at 12:37 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Isolated Minor/Moderate (R1/R2) radio blackouts likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with a solitary, low-level Moderate flare observed at 13/1424 UTC from a now decayed region in the southeast disc. There are four sunspot regions on the Earth-facing disc. The largest of these, located in the northwest, exhibited decay in its leading portion and spreading of its main, opposing polarity spots. A moderately-large region in the far southwest, saw weakening of its trailing spots, but also some agglomeration of its leading spots, with occasional Common-class flare activity observed during the period. A new region in the south-centre disc underwent notable growth, developing a mature leading region, with numerous intermediate and trailing spots of smaller size. Small regions in the southeast and southwest disc decayed, meanwhile, a new, small region recently emerged in the northeast.

No clear Earth-directed Coronal Mass Ejections (CMEs) were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds showed an ongoing slow wind regime. Solar wind speeds were at background, typically varying between 300-350km/s. The Interplanetary Magnetic Field (IMF), Bt, was largely weak, but became moderate from around 14/0800 UTC. The north-south component, Bz, varied between weakly positive and moderately negative. The net result of the above solar wind measures was for Quiet geomagnetic activity throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely, with isolated Moderate-class flares. There is a slight chance of isolated Strong-class flares.

Solar Wind / Geomagnetic Activity: There are no clear Earth-directed CMEs as of the issue of this guidance.

Slow wind conditions are expected until a faster solar wind onset from a recurrent coronal hole, most likely late on Day 1 or into Day 2 (14-15 Dec). Geomagnetic activity is expected to start mostly Quiet as a result, then rising to give a spell of Unsettled to Active conditions with a Slight Chance of

G1 Minor Storm intervals. Activity and solar winds expected to ease into the new working week, returning conditions to mainly Quiet to Unsettled.

Energetic Particles / Solar Radiation: There is a daily slight chance of S1/ Minor solar radiation storms or greater, in response to any notable flares.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	15	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	70	60	60	55
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						